WHAT IS CLAIMED IS:

1. A network management apparatus for managing a transmission network in which one (1) or more currently-used route(s) for transmitting signals is/are set, and an alternative route(s) corresponding respectively to the currently-used route(s) and used when a failure(s) has occurred to the currently-used route(s) has/have been defined in advance, and each alternative route is formed by backup connections for the alternative route being set by each node present on the alternative route, comprising:

a storage unit storing backup connection information data containing information on the backup connections comprising the alternative route corresponding to each currently-used route, currently-used route data containing information on the currently-used route(s) corresponding to each backup connection and alternative route management data for managing setting status of the backup connections comprising the alternative route(s);

an operation unit registering in the storage unit the alternative route management data corresponding to the currently-used route(s) to which a failure(s) has/have occurred, on having received a failure occurrence notice(s) of the currently-used route(s); and

a determination unit identifying the currently-used route(s) corresponding to the backup connections based on

a creation notice(s) of the backup connections and the currently-used route data stored in the storage unit, on having received from nodes the creation notice(s) of the backup connections, switching the setting status of the backup connections in the alternative route management data corresponding to the identified currently-used route(s) to a setting completion and determining a recovery completion of the currently-used route(s) when the setting status of all the backup connections corresponding to the currently-used route(s) to which the failure(s) has/have occurred become the setting completion.

2. The network management apparatus according to claim 1, wherein the alternative route management data contains data representing recovery status of the corresponding currently-used route(s) and the determination unit determines the recovery completion of the currently-used route(s) by setting the data representing the recovery status to "recovered" when all the setting status of the backup connections corresponding to the currently-used route(s) to which the failure(s) has/have occurred become the setting completion.

3. The network management apparatus according to claim 1, wherein:

the storage unit further stores creation connection information management data in which the backup connections

having notified of from the nodes is registered;

the determination unit, on having received the creation notice(s) of the backup connections, when the alternative route management data of the currently-used route(s) corresponding to the creation notice(s) of the backup connections is not registered in the storage unit, registers the backup connections of the received creation notice(s), in the creation connection information management data;

the operation unit, on having received the failure occurrence notice(s) of the currently-used route(s), registers the alternative route management data corresponding to the currently-used route(s) to which the failure(s) has/have occurred, in the storage unit and sets the setting status of the backup connections same as the backup connections registered in the creation connection information management data to the setting completion among the setting statuses of backup connections of the registered alternative route management data.

4. The network management apparatus according to claim 2, wherein:

the storage unit further stores creation connection information management data in which the backup connections having notified of from the nodes is registered;

the determination unit, on having received the creation notice(s) of the backup connections, when the

alternative route management data of the currently-used route(s) corresponding to the creation notice(s) of the backup connections is not registered in the storage unit, registers the backup connections of the received creation notice(s), in the creation connection information management data;

the operation unit, on having received the failure occurrence notice(s) of the currently-used route(s), registers the alternative route management data corresponding to the currently-used route(s) to which the failure(s) has/have occurred, in the storage unit and sets the setting status of the backup connections same as the backup connections registered in the creation connection information management data to the setting completion among the setting statuses of backup connections of the registered alternative route management data.

5. The network management apparatus according to claim 2, wherein:

the storage unit further stores overlapping connection management data representing the number of the currently-used route(s) corresponding to each backup connection;

the determination unit, on receiving the creation notice of the backup connections from the nodes, identifies the currently-used route(s) corresponding to the backup connections of the creation notice(s) based on the

currently-used route data and registers in the overlapping connection management data the number of the currently-used route(s) which registered in the alternative route management data and data representing which recovery status is/are not set to "recovered".

6. The network management apparatus according to claim 5, wherein the determination unit, when switching back from the alternative route(s) to the currently-used route(s), identifies the backup connections corresponding to the alternative route(s) based on the backup connection information data, reduces by one (1) the number of the identified backup connections in the overlapping connection management data, and releases the backup connections of which the number has become zero (0).

7. A network management apparatus for managing a transmission network in which, when a failure(s) has/have occurred to a currently-used route(s) set for transmitting signals, each node present on a predetermined alternative route form an alternative route(s) by setting backup connections for the alternative route(s) and the signals are transmitted along the alternative route, comprising:

a storage unit for storing backup connection data representing the backup connections of the each node present on the alternative route(s);

an operation unit for creating management data for

managing a setting status of the backup connections of said each node based on the backup connection data of said each node stored in the storage unit, on receiving failure occurrence notice(s) of the currently-used route(s); and

a determination unit for setting the setting status corresponding to the backup connections in the management data, to a setting completion on receiving from the node present on the alternative route a creation notice of the backup connections of the node and for determining that a recovery of the currently-used route(s) has been completed when all the setting statuses of the alternative connections included in the alternative route(s) are set to the setting completion.

8. A network management apparatus for managing a transmission network in which, when a failure(s) has/have occurred to a currently-used route(s) set for transmitting signals, each node present on a predetermined alternative route form an alternative route(s) by setting backup connections for the alternative route(s) and the signals are transmitted along the alternative route, comprising:

a storage unit for storing management data for managing a setting status of the backup connections of the each node present on the alternative route(s); and

a determination unit for setting the setting status corresponding to the alternative connections in the management data, to a setting completion on receiving from

a node present on the alternative route a creation notice of the backup connections of the node and for determining that the recovery of the currently-used route(s) has been completed when all the setting statuses of the alternative connections included in the alternative route(s) are set to the setting completion.